FIVE-YEAR REVIEW REPORT

Third Five-Year Review Report

for
NL Industries/Taracorp Lead Smelter Site

Granite City

Madison County, Illinois

March 2009

PREPARED BY:

U.S. EPA REGION 5
Chicago, Illinois

Approved by:

Richard C. Karl, Director
Superfund Division

Date:

3-30-09

Five-Year Review Report

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List of Acronyms
(In Order of Appearance)

NAME OR TERM	ACRONYM
United States	U.S.
Environmental Protection Agency	EPA
Supplemental Environmental Project	SEP
Comprehensive Environmental Response, Compensation and Liability Act (Superfund)	CERCLA
Institutional Controls	ICs
National Contingency Plan	NCP
Code of Federal Regulations	CFR
Record of Decision	ROD
parts per million	ppm
Decision Document/Explanation of Significant Differences	DD/ESD
Potentially Responsible Parties	PRPs
Unilateral Administrative Order	UAO
Remedial Design/Remedial Action	RD/RA
Consent Decree	CD
National Priorities List	NPL
Operation and Maintenance	O&M

Executive Summary

The NL Industries/Taracorp Lead Smelter property was a lead-acid battery reclamation facility and secondary lead smelter that operated from the turn of the twentieth century until 1983. Smelting activities resulted in lead air emissions that exceeded the National Ambient Air Quality standards (NAAQS) for lead during the operation of the smelter. The main industrial portion of the former smelter facility is approximately 16 acres, but the contamination was spread via stack emissions and fill activities throughout a three-city area (Granite City, Madison, and Venice, Illinois) and isolated areas in neighboring communities (the Site). Once the smelter was shut down, residual contamination of metals, primarily lead, was found to exist in various locations. Residual contamination was found in soils on residential and commercial/industrial properties within an approximately two-mile radius of the smelter (deposited by smelter stack emissions) and in residential yards, commercial properties, alleys, and parking lots where crushed, hard rubber battery casing material was used as fill in dozens of locations within a 15-mile radius of the smelter property. Additionally, residual metals contamination was found on the main industrial property 1) near the former operations in the parking lot and road due to residual contamination from the process; and 2) in a 3.5 acre waste pile consisting of slag, battery cases, and other debris on the main industrial property (referred to as the Taracorp pile). Finally, residual ground water contamination was found in the immediate vicinity of the former battery breaker adjacent to the Taracorp pile. The primary risks posed by the metals contamination were from direct contact and ingestion of contaminated soils and waste materials. In 1993, cleanup began on the 1600 residential properties contaminated with lead from smelter stack emissions and approximately 70 alleys, parking lots, and driveways where the crushed battery casing material was used as fill. All cleanup activities were completed except for approximately 84 properties in the cleanup zone where the owners refused access for sampling or remediation. The remedy for the Site was implemented from early 1993 through May 2000 pursuant to a March 30, 1990 Record of Decision issued by the United States Environmental Protection Agency (U.S. EPA) and several follow-up decision documents. Remedial action commenced as a Superfund lead Site and was converted to PRP lead as six generators (the Group) took over in 1998. In 1998, capping of the Taracorp pile began. The majority of the work was complete by spring of 2000 and the Preliminary Close-Out Report was completed on September 26, 2000. On August 2, 2000, U.S. EPA conducted a pre-final inspection at the NL Site. The ground water was not remediated because the metals were not migrating more than approximately 100 feet from the Taracorp pile. All residents in the area are hooked up to city water. All cleanup activities, with the exception of the residential properties where access was refused, were completed in 2000 and ground water monitoring and Taracorp pile cap inspections continue to the present.

The remedy at the NL Industries/Taracorp Lead Smelter Site is protective of human health and the environment in the short term because: the final remedy has been fully implemented (except at the residences that have refused access); the sampling data indicate that the remedy continues to be effective in addressing the exposure pathways that were identified at the Site; there is no evidence of current exposure (even for the concern noted in the Slough Road area where the battery chips have been disbursed beyond the capped area); and the groundwater contamination is confined to the former lead smelter property. Further, the Remedial Action Consent Decree (CD)

provides an extra measure of protection by requiring the implementation of a SEP to address lead-based paint issues in the Site area. This SEP helps to provide a multi-media cleanup that goes beyond the requirements in the ROD for the Site. U.S. EPA will need to continue to monitor the progress of the paint SEP. However, required Institutional Controls (ICs) are not yet in place. Long-term protectiveness of the remedy requires implementation of effective ICs and monitoring, maintenance and compliance with effective ICs along with remedy components. Compliance with ICs will be ensured through long term stewardship by implementing, maintaining, monitoring and enforcing effective ICs as well as maintaining the site remedy components. Last, U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences which refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.

This report documents the third five-year review for the NL Industries/Taracorp Lead Smelter Site in Granite City, Illinois. In addition to the regular inspections conducted in accordance with the approved Operation and Maintenance (O&M) Plan for the Site, the Group collected soil samples and groundwater samples, pursuant to approved Scopes of Work, in conjunction with the five-year review. The cap over the Taracorp pile and other remedy components at the Site were also inspected in November 2008 by the U.S. EPA, Illinois EPA (IEPA), and Group representatives. The findings indicate that the NL Industries/Taracorp Site Lead Smelter remedy continues to be protective of human health and the environment in the short-term but additional actions are necessary to ensure long-term protectiveness. Those actions include assuring that the ICs will be implemented, monitored, maintained and enforced. U.S. EPA will continue to work with the Group to approve the IC Work plan and oversee its implementation. Other necessary actions include reseeding and filling minor ridges on the cap, and exploring the removal/capping and/or additional restrictions in the Slough Road area to assure no exposure is occurring. The next Five-Year Review Report is due in March 2014.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: NL Industries/Taracorp Lead Smelter		
EPA ID *(from WasteLAN)*: ILD096731468		
Region: 5	**State:** IL	**City/County:** Granite City/Madison
SITE STATUS		
NPL status: x Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐Under Construction x Operating ☐ Complete		
Multiple OUs?* ☐ YES x NO	**Construction completion date:** PCOR 09/26/2000	
Has site been put into reuse? ☐ YES x NO		
REVIEW STATUS		
Lead agency: x EPA ☐ State ☐ Tribe ☐ Other Federal Agency		
Author name: Sheri L. Bianchin		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA Region 5	
Review period: March 2004 – March 2009		
Date(s) of site inspection: 11/20/08		
Type of review: X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐ 1 (first) ☐ 2 (second) **X** 3 (third) ☐ Other (specify)		
Triggering action: ☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____ ☐ Construction Completion X Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: 03/30/2004		
Due date *(five years after triggering action date)*: 03/30/2009		

* ["OU" refers to operable unit.]

Issues:

1. Institutional Controls have not been implemented, monitored and maintained
2. Minor ridges on the cap are evident.
3. Spread of battery chips evident beyond paved area in Slough Road Area.
4. 84 Residential yards have not been sampled and/or remediated due to access refusal.
5. SEP implementation needs to continue.

Recommendations and Follow-up Actions:

1. To assure that the ICs will be implemented, monitored, maintained and enforced, U.S. EPA will continue to work with the Group to approve the IC Workplan and oversee implementation.
2. Minor ridges on the cap shall be filled/reseeded during next routine O&M event.
3. Explore removal/capping and/or additional restrictions in the Slough Road area to assure no exposure is occurring.
4. U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences which refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.
5. SEP implementation needs to continue under U.S. EPA oversight.

Protectiveness Statement(s):

The remedy at the Site is protective of human health and the environment in the short term because: the final remedy has been fully implemented (except at the residences that have refused access); the sampling data indicate that the remedy continues to be effective in addressing the exposure pathways that were identified at the Site; there is no evidence of current exposure (even for the concern noted in the Slough Road area where the battery chips have been disbursed beyond the capped area); and the groundwater contamination is contained under the former lead smelter property. Further, the CD provides an extra measure of protection by requiring the implementation of a SEP to address lead-based paint issues in the Site area. This SEP helps to provide a multi-media cleanup that goes beyond the requirements in the ROD for the Site. U.S. EPA will need to continue to monitor the progress of the paint SEP, which is required by the CD but is not part of the selected remedy. However, required ICs are not yet in place. Long-term protectiveness of the remedy requires implementation of effective ICs and monitoring, maintenance and compliance with effective ICs along with remedy components. Compliance with ICs will be ensured through long term stewardship by implementing, maintaining, monitoring and enforcing effective ICs as well as maintaining the site remedy components. Last, U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences which refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.

Other Comments: None.

Environmental Indicator and Ready for Reuse Updates as follows:
Date of last Regional review of Human Exposure Indicator: 9-28-06;
Human Exposure Survey Status: Current Human Exposure Controlled;
Date of last Regional review of Groundwater Migration Indicator: 6-22-07;
Groundwater Migration Survey Status: Contaminated Ground water Migration under Control;
Ready for Reuse Determination Status: Not Yet Ready for Anticipated Use;
Source for above information is CERCLIS

Five-Year Review Report

I. INTRODUCTION

The U.S. EPA conducted the first five-year review in 1998, while remedial action implementation was still underway. U.S. EPA issued the first Five-Year Review Report on March 31, 1999. The second five-year review was completed in March 2004. Several minor issues were noted during that review; however the remedy was found to be protective of human health and the environment.

The Purpose of the Review

The purpose of five-year reviews is to determine whether the remedy at a site continues to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them.

Authority for Conducting the Five-Year Review

U.S EPA is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

U.S. EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for the unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

Who Conducted the Five-Year Review

U.S. EPA conducted the Five-Year Review with consultation from the Illinois EPA. The Group,

through their contractors, conducted all of the sampling that was required for the five-year review. In November 2008, U.S. EPA, IEPA, and Group representatives visited the Site and monitored the integrity of the cover systems at the Site as well as other remedy components. The Group has conducted the O&M on a routine basis for the last five years in accordance with the approved O&M plan and the CD and has submitted progress reports to U.S. EPA and IEPA on a regular basis. U.S. EPA completed the review based on all the above information.

Other Review Characteristics

This is the third five-year review for the Site. The triggering action for this review is the completion of the second five-year review on March 30, 2004. This review is being conducted because the remedy does not allow for unlimited use/unrestricted exposure (UU/UE). That is 1) because the capping remedy for the on-site waste pile (i.e., Taracorp pile) left wastes in place, the paving of some of streets and alleyways left wastes in place, and the cleanup levels at the industrial property allowed hazardous substances to be left on-site above levels that allow for UU/UE and 2) to ensure that residential yards were not recontaminated with lead from neighboring yards where owners refused the cleanup.

II. SITE CHRONOLOGY

The site chronology is tabularized below:

Event	Date
National Priorities List Listing	6/10/86
Remedial Investigation/Feasibility Study complete	3/30/90
Record of Decision	3/30/90
U.S. EPA issued Unilateral Order to PRPs	11/27/90
Remedial Design start (U.S. EPA-Lead)	3/8/91
Remedial Design complete (U.S. EPA-lead)	3/15/93
Remedial Action start (U.S. EPA-lead)	3/15/93
Explanation of Significant Differences	5/7/1993
Explanation of Significant Differences	1/27/1994

Decision Document/Explanation of Significant Differences	9/29/95
Remedial Action Continues (PRP-lead)	7/13/98
First Five-Year review	3/31/99
Remedial Action complete (PRP-lead)	5/30/00
Explanation of Significant Differences	9/19/00
Preliminary Close-out Report	9/26/00
Remedial Design/Remedial Action Consent Decree Entry	3/20/03
Consent Decree Entry with NL Industries	5/13/03
Second Five Year Review	3/30/04

III. BACKGROUND

Physical Characteristics

The NL Industries/Taracorp Lead Smelter property in Granite City, Illinois is a former lead-acid battery reclamation facility and secondary lead smelter that operated from the early 1900s through 1983. The main industrial property is approximately 16 acres; however, the contamination was spread via stack emissions and fill activities throughout a three-city area (Granite City, Madison, and Venice, Illinois) and isolated areas in neighboring communities. A map of the Site is shown in Figure 2. Metals, including lead, were released to the environment via 1) airborne emissions from the tall stack on-site and fugitive dust from the on-site Taracorp pile, 2) crushed hard rubber battery casing material that was used as fill in nearby alleys, parking lots, driveways, and residential yards; and 3) ground water contamination resulting from releases of metals from the Taracorp pile. The Site was proposed for the National Priorities List (NPL) on October 15, 1984. The Site was added to the NPL on June 10, 1986.

Land and Resource Use

The main industrial portion of the Site is bounded by 16th Street on the east, Niedringhaus Road to the north, a rail corridor to the west and State Street to the south (See Figure 1). However, the contamination was spread throughout Granite City, Madison, and Venice, Illinois and isolated areas in neighboring communities. The nearest residences are located immediately adjacent to the main industrial portion of the Site to the east, north, northeast, and south.

Regional Hydrogeology

The Site is approximately eight to ten miles south of the confluence of the Mississippi and Missouri Rivers. Granite City's municipal drinking water comes from the Mississippi River and does not appear to be affected by any contaminated groundwater. The NL site is underlain by recent alluvium and glaciofluvial and glaciolacustrine deposits. Bedrock beneath the alluvium is carboniferous age rocks consisting of limestone, sandstone, and shale. The alluvium and glacial deposit which fill the valley range in thickness from less than one foot adjacent to the bluff boundary and the Chain of Rocks reach of the Mississippi River, to greater than 170 feet near the City of Wood River. The estimated thickness of the valley beneath the Site is approximately 100 to 120 feet. Investigations have concluded that the deposits become coarser with depth. Generally, groundwater in the Granite City area occurs within the unconsolidated valley deposits under unconfined and leaky confined conditions. Recharge of groundwater within the area is from precipitation and induced infiltration of surface water from the Mississippi River and smaller surface water bodies in the area. Groundwater flow is relatively slow and regionally moves in the south/southwesterly direction. All residents in the area are hooked up to city water.

History of Contamination

Historically, secondary lead smelting, metal refining, fabricating, and associated activities were conducted at the NL/Taracorp Industrial property since the turn of the twentieth century to about 1983. Lead-acid battery recycling activities commenced during the 1950s. These operations produced extensive on-site and off-site contamination. Smelting activities resulted in lead air emissions that exceeded the National Ambient Air Quality standards (NAAQS) for lead during the operation of the smelter. The main industrial portion of the Site is approximately 16 acres, but the contamination was spread via stack emissions and fill activities throughout a three-city area (Granite City, Madison, and Venice, Illinois) and isolated areas in neighboring communities. Once the smelter was shut down, residual contamination of metals, primarily lead, was found to exist in various locations. Airborne metal (primarily lead) emissions from the facility's secondary smelting operations and fugitive dust from the on-site Taracorp pile was found in soils on residential and commercial/industrial properties; approximately 1600 residences around the site contained lead levels in soil that exceeded the site-specific cleanup level. The furthest residences contaminated in this manner (i.e., lead deposited by smelter stack emissions) were located approximately two miles from the former smelter, to the northeast. Additionally, crushed hard rubber battery casing material (also known as chips) was sold or given away by NL Industries, and residents and local street crews used this material in alleys, parking lots, driveways, and to fill in some flood-prone areas which were ultimately developed into residential lots. The fill material was found as far as 16 miles away from the smelter property, but the majority was located within two miles of the smelter property. Additionally, residual metals contamination was found on the smelter property 1) near the former operations in the parking lot and road due to residual contamination from the process and 2) in a 3.5 acre waste pile consisting of slag, battery cases, and other debris on the main industrial property. Finally, residual ground water contamination was found in the immediate vicinity of the former battery breaker adjacent

to the Taracorp pile.

The main risks posed by the metals contamination was from direct contact and ingestion of contaminated soils and waste materials. In 1993, cleanup began on the 1600 residential properties contaminated with lead from smelter stack emissions and approximately 70 alleys, parking lots, and driveways where the crushed battery casing material was used as fill. All were completed except for approximately 84 properties in the cleanup zone where the owners refused access for sampling and/or remediation. The remedy for the Site was implemented from early 1993 through May 2000 pursuant to a March 30, 1990 Record of Decision issued by the U.S. EPA and several follow-up decision documents. In 1998, capping of the Taracorp pile began.

The Site began remedial action as a fund lead Site and then the Group took over in 1998. The majority of the work was complete by spring of 2000 and the Preliminary Close-Out Report was completed on September 26, 2000. On August 2, 2000, U.S. EPA conducted a pre-final inspection at the NL Site. The ground water was not remediated because the metals were not migrating more than approximately 100 feet from the Taracorp pile. All residents in the area are hooked up to city water. All cleanup activities, with the exception of some residential properties where access was refused, were completed in 2000, and ground water monitoring and Taracorp pile cap inspections continue to the present.

Taracorp Industries purchased the main industrial facility property from NL Industries, Inc., in 1979, and owned it until 1997. The battery recycling and secondary lead smelting operations generated an on-site pile of blast furnace slag and battery casing debris (i.e., the Taracorp pile). In July of 1981, St. Louis Lead Recyclers, Inc. (SLLR) began using equipment on adjacent property owned by Trust 454 to separate components of the Taracorp pile. SLLR attempted to recycle lead-bearing materials to the furnaces at Taracorp and send hard rubber and plastic off-site for recycling. Hard rubber was the end waste product of this recycling process. SLLR continued operations until March 1983 when it shut down its equipment. Residual lead-bearing waste materials from the operation remained on Trust 454 property, as did some equipment.

In 1983, a State of Illinois study of the Granite City lead emissions problem linked emissions from the on-site lead smelter and reclamation operations at the facility to the air pollution problem in the area. A State Implementation Plan for regulating air pollution sources in Granite City was published in September 1983 by the IEPA. The IEPA's Report indicated that the non-attainment status for lead air emissions in Granite City was in large part attributable to emissions associated with the operation of the secondary lead smelter operated by Taracorp and lead reclamation activities conducted by SLLR.

Additionally, because of concerns over lead contamination in the communities and a documented risk to public health from exposure to high levels of lead, the State of Illinois denied an application to continue operating the smelter. Secondary lead smelting operations were discontinued during 1983 and the equipment dismantled. Metalico, the current owner of most of the main industrial property, continues to perform metal refining at the facility. A 1991 blood

lead study indicated that 16% of the children in Granite City, Madison, and Venice aged 6 months to 6 years had blood lead levels exceeding 10 micrograms per deciliter (ug/dl), the Centers for Disease Control level of concern. Within one-quarter mile of the smelter, 25% of the kids had blood lead levels in excess of 10 ug/dl.

Taracorp continues to own the property where the large Taracorp pile is located. The other property owners for the former smelter property are the NL Industries Generator Site Group LLC (BV&G Transport), and Mr. Scott Oney, State Street Warehouse (formerly Rich Oil and Trust 454).

Lead contamination from the Site came to be located in home interiors and surficial soils in many nearby residences, alleys, driveways, parks, and parking lots. Prior to the remediation, children in the area were impacted by the lead released from the Site.

Remedial Investigation (RI)/Feasibility Study (FS)

NL, as former owner of the facility, voluntarily entered into an Agreement and Administrative Order by Consent with the U.S. EPA and IEPA in May 1985 to implement a RI/FS. The RI/FS work began in 1986, and the purpose of the RI was to identify the nature and extent of contamination at the Site and to determine any risks to the public health, welfare or the environment caused by the releases of contamination. The results are provided within the RI Report which also included a baseline risk assessment conducted to characterize the current and potential threats to public health and the environment at the Site.

The RI for the Site indicated the need to prevent direct contact and ingestion and inhalation of lead-contaminated soils and waste materials in the Taracorp pile, the SLLR piles, and the main industrial facility; residential soils contaminated by lead fallout from the smelter stack; and battery case material used as fill material for alleys, driveways, and other areas. Additionally, the RI indicated a need for further ground water monitoring in the deeper zone of the upper aquifer and a mechanism for remediation of any contaminants in the ground water that are detected in concentrations that would present an endangerment to public health and the environment.

The goals of the FS were to fully evaluate clean-up alternatives that can be used to remove, reduce or stabilize threats from contaminants at the Site. Seven different cleanup alternatives to address contamination were evaluated in the FS. The estimated costs of these remedies ranged from about $500,000 for a no action remedy which included only monitoring and deed restrictions, to $67 million which assumed all the contaminated soil and waste material in the Taracorp pile would be disposed off-site. Five of the remaining remedies involved removing and disposing of drums off-site, excavating lead contaminated soil and battery chips from residential properties and alleys and consolidating them with the industrial lead pile, capping the pile and moving some of the soil to an off-site landfill and performing additional ground water monitoring. For all the remedies requiring soil cleanup, NL Industries proposed that soil be cleaned up to 1,000 parts per million (ppm) lead for both industrial and residential properties.

NL Industries refused to develop an alternative for a residential cleanup level of 500 ppm lead. Hence, U.S. EPA developed such an alternative in an addendum to the FS. Following a detailed analysis of the alternatives by U.S. EPA, a Proposed Plan for remedial action was issued in January 1990.

Initial Response

In 1993, U.S. EPA and the U.S. Army Corps of Engineers performed a rapid response action at the Site to remove the most highly contaminated site areas, approximately 50 locations where battery casing fill material was located and readily accessible to children. This action was completed in 1994.

Basis For Taking Action

The primary exposure pathway identified during the Remedial Investigation/Feasibility Study for the Site was direct contact and ingestion of lead-contaminated soil and dust by small children. Lead was identified as the primary contaminant of concern at the Site. There was a known blood lead problem in the communities near the Site. Inhalation of lead-bearing dust from the on-site Taracorp pile was an additional exposure pathway of concern. Although the ground water in the immediate vicinity of the waste (slag/debris) pile was contaminated with lead, cadmium, and zinc, this exposure pathway was not considered to be complete because all of the residents consume potable water provided by the municipality. This is explained further in the section below.

IV. REMEDIAL ACTIONS

Remedy Selection

The Remedy for the Site is contained in various documents including a Record of Decision (ROD), a Decision Document reaffirming the ROD (the record was reopened per a court settlement), and four Explanations of Significant Differences (ESDs). Based on the above-mentioned remedy documents, which are discussed further below, the Remedial Action Objectives (RAOs) for the Site are a combination of achieving UU/UE in the residential areas, and containment in all other Site areas.

The first ROD was signed by the Regional Administrator on March 30, 1990, after taking into consideration all public comments. The cleanup decision embodied in the ROD addressed the Taracorp pile, the SLLR piles, and residential soil, alleys, and driveways that are contaminated by airborne lead and/or hard rubber battery casing material, groundwater monitoring and selected a 500 ppm lead soil cleanup level for residential properties, and a 1,000 ppm cleanup level for industrial properties. More specifically, the ROD required excavation and off-site disposal of soil and fill material from residential yards, parks, schools, alleys, parking lots, and driveways that exceeded 500 ppm lead; excavation and consolidation with the Taracorp pile on the main

industrial area soils and debris that exceeded 1000 ppm lead; capping of the Taracorp pile; and expanded (deeper) ground water monitoring around the Taracorp pile. The specific elements of the remedy are outlined in detail below.

The ROD also indicated that a blood lead study should be performed in the area around the Site. The remedy was modified slightly via the September 29, 1995, Decision Document/Explanation of Significant Differences (DD/ESD). The DD/ESD required off-site monitoring and containment of the ground water plume emanating from the Taracorp pile. After results of off-site monitoring indicated that the ground water contaminant plume was not migrating more than approximately 100 feet from the edge of the Taracorp pile, U.S. EPA issued a second ESD on September 19, 2000 that removed the requirement for a ground water containment remedy and required continuation of the expanded monitoring program and the development of a contingency plan in the event that the plume expanded in the future.

Since the time the ROD was signed, it has been reopened once, and four ESDs have been issued.

The first ESD, signed on May 7, 1993, allowed for battery case material that was contaminated with greater than 500 ppm lead but was not hazardous per the Toxicity Characteristic Leaching Procedure (TCLP) test, to be disposed of at an off-site landfill rather than consolidated with the Taracorp pile, as originally specified in the 1990 ROD. During U.S. EPA's remediation of battery case material, which commenced in the spring of 1993, numerous additional battery case locations were discovered. Over 100 such locations were identified with lead concentrations exceeding 500 ppm including a large roadway termed Slough Road. Given this large increase in volume of battery case material to be remediated (e.g., 1990 ROD cost estimates were based on 18 locations), U.S. EPA decided to reevaluate the excavation and disposal remedy for the battery case material contained in the 1990 ROD. The second ESD, signed on January 27, 1994, allowed for disposal of residential soils contaminated with greater than 500 ppm lead and that are not hazardous per the TCLP test at an off-site landfill rather than consolidated with the Taracorp pile, as originally specified in the 1990 ROD. This was also based upon an increase in the volume of soils to be dealt with and public opposition to increasing the size of the Taracorp pile.

Next, as an agreement pursuant to a legal action brought by the PRPs and the City of Granite City to enjoin the remedy, U.S. EPA reopened the Record of Decision. This is discussed further in the section below on Enforcement History. On February 17, 1995, U.S. EPA released a Proposed Plan for remedy reconsideration. The Proposed Plan reaffirmed the 500 ppm residential lead soil cleanup level which was the primary concern of the PRPs. The Proposed Plan also reaffirmed the capping/containment remedy for the Taracorp pile which was the primary concern of the City of Granite City. Furthermore, in response to the recently detected groundwater contamination, U.S. EPA also included a ground water remedy component in the Proposed Plan. Additionally, provisions that were not contained in the 1990 ROD were added, including the additional remote fill areas where crushed battery cases had been used for fill, and based upon a multi-media approach to the lead contamination problem, provided for making a High Efficiency Particulate Arrester (HEPA) vacuum available to residents in the cleanup zone for interior house dust

cleaning, and paving a truck lot at 1420 State Street to prevent possible lead recontamination of nearby residential properties, among other provisions. On September 29, 1995, U.S. EPA issued the Decision Document and Explanation of Significant Differences (DD/ESD), which contained these additional components described in the Proposed Plan. The increased costs estimates for remediation were presented accordingly.

Finally, an ESD was issued in September 2000. Based on the installation of additional monitoring wells in March and June 2000, data collected indicated that the lead in ground water does not migrate more than approximately 100 feet from the Taracorp pile where it is likely buffered by the chemistry of the water and soil. Additionally, U.S. EPA anticipated that the concentration of lead in ground water in the perimeter wells around the pile will decrease since the highly contaminated main industrial area soils were consolidated with the Taracorp pile and the pile was capped with a RCRA subtitle C, multi-layered cap in 1999. This consolidation and capping would divert precipitation away from the waste materials in the Taracorp pile and, thus, decrease the amount of lead leaching from the pile and other areas of the main industrial area in the future. Collectively, this information indicated that ground water contamination at the NL Site is very limited and will likely decrease even further in the future. Hence, the September 2000 ESD required that monitoring be continued and that a contingency plan be implemented if ground water contamination increases above acceptable levels, rather than the installation of a ground water containment system at the Site.

The Final Selected Remedy

The components of the remedy as specified in the Record of Decision (ROD) dated March 30, 1990; ESD dated May 7, 1993; ESD dated January 27, 1994; the DD/ESD dated September 29, 1995, and the ESD dated September 2000 are:

- Installation of an upgraded security fence around the expanded Taracorp pile.
- Deed Restrictions and other institutional controls to prevent access to the Taracorp pile.
- Performance of soil lead sampling to determine which areas must be excavated and the extent of the excavation.
- Inspection of alleys and driveways and areas containing surficial battery case material in Venice, Eagle Park Acres, Granite City, Madison and any other nearby communities to determine whether additional areas not identified in the Feasibility Study must be remediated as described below.
- Performance of blood lead sampling to provide the community with current data on potential acute health effects associated with Site contamination.

- Installation of a minimum of one upgradient and three downgradient deep wells, monitoring of ground water and air, and inspection and maintenance of the cap.

- Removal and recovery of all drums on the Taracorp pile at a secondary lead smelter.

- Consolidation of waste contained in adjacent SLLR piles with the Taracorp pile.

- Excavation and off-site disposal of battery case material from all applicable alleys and driveways in Granite City, Madison, and Venice, Illinois, and any other nearby communities with lead concentrations greater than 500 ppm.

- Excavation and consolidation with the Taracorp pile of all unpaved portions of the adjacent Trust 454, Rich Oil, and BV&G Transport properties with lead concentrations greater than 1000 ppm.

- Excavation and consolidation with the Taracorp pile or off-site disposal of all residential soils and battery case materials in Granite City, Madison, and Venice, Illinois, and any other nearby communities with lead concentrations greater than 500 ppm.

- Consolidation of the soils and crushed casings and lead contaminated materials from the adjacent waste piles into the existing Taracorp waste (slag/debris) pile if the materials do not fail the TCLP.

- Inspection of the interiors of homes on property to be excavated to identify possible additional sources of lead exposure and recommend appropriate actions to minimize exposure.

- Monitoring of ground water at the industrial facility and implementation of a contingency plan, if needed, to remediate contaminated ground water.

- Implementation of dust control measures during all remedial construction activities.

- Construction of a RCRA-compliant, multi-media cap over the expanded Taracorp pile and a clay liner under all newly-created portions of the expanded Taracorp pile.

- Development of contingency plans to provide remedial action in the event that the concentration of contaminants in ground water or air (lead or PM_{10} (particulate matter greater than 10 microns)) exceed applicable standards or established action levels, or that waste materials or soils have become releasable to the air in the

future.

- o Development of contingency measures to provide for sampling and removal of any soils within the zone of contamination, defined by the soil lead sampling to be implemented above, with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future due to land use changes or deterioration of the existing use.

- o Monitoring of nearby communities to determine if additional areas need remediation or lead exposures need mitigation

Enforcement Activities and History

Following unsuccessful efforts to negotiate a settlement with the PRPs for remedy design and implementation, U.S. EPA, on November 27, 1990, issued a Unilateral Administrative Order (UAO), pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606. The UAO directed certain PRPs to undertake the response actions identified in the ROD. The UAO was issued to NL Industries (former owner/operator) and the top 49 generators at the Site to conduct the remedial action for the Site. In issuing this UAO, U.S. EPA made a number of findings based on the Administrative Record, including a finding that the release or threat of release of hazardous substances from the facilities at the NL Site is or may be presenting an imminent and substantial endangerment to the public health or welfare or the environment.

The UAO required that U.S. EPA be notified if the PRPs intended to comply with the UAO. Since none of the recipients of the Order notified U.S. EPA of its intention to comply fully with the Order, in 1991 U.S EPA brought an action in federal court to compel certain PRPs to comply with the UAO, pay penalties for their failure to comply with the 1990 UAO, and pay response costs.

After these PRPs failed to comply with the UAO, U.S. EPA undertook the Remedial Design (RD) and the Remedial Action (RA) for the Site using Superfund money. The RD, which involved gaining access to and sampling approximately 3000 residential yards, was started in 1991 and finished in 1993. In 1993, U.S. EPA, with the U.S. Army Corps of Engineers (Corps), commenced a rapid response action in 1993 to clean up the most highly contaminated yards, parking lots, driveways, and alleys where crushed battery casing material from the Site was used as fill. In August 1994, U.S. EPA began implementation of the remedial action for the approximately 1600 residential yards that were contaminated via smelter stack emissions.

In 1994, the City of Granite City and the PRPs sought a court order halting U.S. EPA's cleanup, disagreeing with the 500 ppm cleanup level for residential areas. As a result of this action, U.S. EPA agreed to suspend certain cleanup activities and reopen the public comment period for the residential soil cleanup level to allow for U.S. EPA's evaluation of all information that had become available subsequent to the March 30, 1990 ROD. Accordingly, U.S. EPA released a

Proposed Plan and reopened the public comment period for the residential soil lead cleanup level on October 14, 1994. U.S. EPA did reconsider new information submitted by the PRPs. On September 29, 1995, U.S. EPA issued the DD/ESD, as is discussed more fully above. U.S. EPA then resumed remedial activities.

In 1994, the defendants and the City of Granite City sought a temporary restraining order against U.S. EPA in an effort to halt the cleanup. In 1996, the PRPs and the City of Granite City parties again tried to enjoin the U.S. EPA clean-up activities. In August 1996 the federal district court found that the PRPs did not demonstrate the harm that was alleged and that the court had no authority to halt U.S. EPA's remedial efforts. The generator defendants then approached U.S. EPA to negotiate a settlement. In July 1998, six of the generator defendants took over the RA and finished all of the cleanup activities at the Site. This work was performed under a Consent Decree (No. 91-CV-578-JLF). The only remaining enforcement issues are to clarify the costs incurred by the Corps as required by the CD.

The CD between the United States and the six generators was entered on March 20, 2003. This CD required that the generators finish all remaining remedial work at the Site (which had already happened by the time the CD was entered); pay U.S. EPA $8,970,000 in past costs; perform a $2,000,000 Supplemental Environmental Project (SEP) for paint assessment and abatement in the Site area; and pay U.S. EPA a $400,000 civil penalty.

A separate Consent Decree with NL Industries, Inc., which was entered on May 12, 2003, required NL Industries, Inc., to pay U.S. EPA $29,780,000 in past costs and a $1,000,000 civil penalty. NL Industries, Inc. has fully complied with this second CD.

Remedy Implementation

As mentioned above, the remedy implementation was begun by U.S. EPA. Using the assistance of the Corps, a rapid response action was commenced in 1993 to clean up the most highly contaminated yards, parking lots, driveways, and alleys where crushed battery casing material from the Site was used as fill. In August 1994, U.S EPA began implementation of the remedial action for the approximately 1500 residential yards that were contaminated via smelter stack emissions. After several starts and stops due to legal matters that are discussed above, U.S EPA finished a portion of the cleanup (approximately 740 residential yards) in 1998, and the six generators took over the remedial action and finished the residential yard cleanups (approximately 770 yards), the remaining fill area cleanups, capping of the Taracorp pile, and installing and sampling the expanded ground water monitoring system by May 30, 2000.

Due to the fact that wastes were left in place, via capping of the Taracorp pile, inspections to determine the integrity of the cap and ground water and leachate monitoring were required. Additionally, since the cleanup involved over 1600 residential yards, alleys, parking lots, and driveways, U.S EPA required that the generators resample approximately 20 residential yards as part of the five-year review monitoring to assess whether recontamination with lead from yards

where residents refused access or other sources may be occurring.

Remedial Design /Remedial Action

Starting in 1991, U.S. EPA performed most of the RD for the NL Site and about half of the RA. In February 1993, the U.S. EPA entered into an interagency agreement with the Corps to design and implement the remedy. The Corps, in turn, contracted with OHM Remediation Services Corporation to conduct the remedial work under a contract. The cleanup was separated into two distinct phases: 1) a rapid response - comparable to a removal action and 2) a longer-term remedial action managed by the Corps. For the rapid response action, the contractor sampled the property where battery casings were used as fill, and cleaned approximately 110 residential areas/alleys requiring immediate attention. For the remedial action, OHM cleaned up another 650 residential lots and alleys that were impacted from smelter stack emission fallout. In general, the contractor was directed to identify the extent of contamination at each property and to eliminate the exposure.

U.S. EPA completed the RD for the soil cleanup portion of the Site and began to remediate the contaminated residential soil, beginning with the areas of greatest contamination first, the highly lead-contaminated battery case material that was used as fill material (remote fill areas), and the areas closest to the former smelter.

In August 2000, U.S. EPA conducted a pre-final inspection at the Site. U.S. EPA documented that the following activities were completed in accordance with the ROD and ESDs:

- ✓ A total of 1505 residential yards containing lead-contaminated soil were excavated and restored. Of these, approximately 770 were completed by the PRPs.
- ✓ All excavated areas of the NL Site were backfilled with clean soil and revegetated.
- ✓ Home interiors were vacuumed with a HEPA vacuum if the homeowner agreed to this measure.
- ✓ A cleanup of the 6-acre main industrial property, including capping of a the Taracorp pile was completed in September 1999.
- ✓ Approximately 100 residential yards and alleys in Venice and Eagle Park Acres where battery chips were used as fill material were cleaned up between 1993 and 1999.
- ✓ An underground storage tank and drums were removed and stabilized.
- ✓ Soils that were transported off-site were tested to ensure that the landfill requirements were achieved.

- ✓ Excavation activities were performed so that, with only a few exceptions where access was not granted, all soils that remain on the residential properties are below the selected cleanup level of 500 ppm total lead. All soils that remain on the industrial properties are below the selected cleanup level of 1,000 ppm total lead.

- ✓ Any soils which failed TCLP testing for lead (i.e., below 5.0 mg/L) were treated prior to disposal.

- ✓ All excavated areas of the industrial facility were consolidated into the Taracorp pile and backfilled with clean soil.

- ✓ On-going groundwater sampling is required to demonstrate that the groundwater contamination does not migrate away from the main industrial portion of the Site. After quarterly ground water sampling demonstrated that the groundwater contamination was not migrating, U.S. EPA agreed to a modification of the sampling frequency. Historic ground water data have indicated that lead, zinc, and cadmium levels exceed applicable ground water standards in wells immediately adjacent to the Taracorp pile; however, this contamination has not migrated more than approximately 100 feet. Currently, groundwater sampling only occurs during the five-year reviews. Sampling was conducted during this third five-year review; the results are similar to the previous evaluation in that the groundwater contamination has not migrated. U.S. EPA will continue to require groundwater sampling during the next five-year review.

- ✓ Ground water monitoring wells were added to the ground water monitoring network for the Site. Several wells were abandoned and replaced.

- ✓ Temporary site security fencing, and upon completion of capping, permanent fencing was put in place at the Site.

- ✓ The readily accessible portions of the Slough Road area in Venice, Illinois, contaminated with battery chips, were paved.

Institutional Controls (ICs)

ICs are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with ICs is required to assure long-term protectiveness for any areas which do not allow for UU/UE. The ROD required using ICs to control future land use.

The industrial portion of the Site is zoned for industrial uses. The clean-up standards selected for

the former smelter property, the alleys and Slough Road are based on commercial/ industrial standards. The selected standards for the soil at the residences are based on unlimited use for the residential areas.

Access controls, in the form of fencing and warning signs, are in place at the Taracorp pile. These controls, along with the continued presence of Metalico (current owner of the former smelter property) employees at the Site, are effective measures to limit access to the Taracorp pile. Because the RA at the Site will not allow UU/UE for various areas, then ICs are required to minimize the potential for human exposure to the hazardous substances and to protect the integrity of the remedy. The areas that required ICs are 1) the main industrial portion of the Site part of which includes the capped Taracorp pile, 2) certain adjacent residential areas that refused access, and 3) the remote fill areas.

The main industrial property consists of approximately 16 acres that formerly contained the lead acid battery recycling and secondary lead smelting facility (formerly NL Industries/Taracorp, now Metalico of Illinois, Inc. and Taracorp, Inc.); the waste pile from the SLLR recycling operation; an area formerly operated by BV&G Transport, now owned by the NL Industries Generator Site Group, L.L.C.; and an area formerly owned by Rich Oil, a fuel oil distributor. The remedy called for cleanup of the industrial areas to an industrial cleanup standard of 1000 parts per million (ppm) lead and containment of the piles. The piles were consolidated into the existing Taracorp pile and engineered with a RCRA-grade cap over the entire pile.

The adjacent residential areas include approximately 500 acres within the cities of Granite City, Venice and Madison, Illinois. Approximately 1600 residences were cleaned up to the residential cleanup standard of 500 ppm lead which would allow unlimited use and unrestricted exposure. However, approximately 84 residences refused access to either sample or remediate properties which were above the cleanup standard.

The remote fill areas include properties in Venice and the Eagle Park Acres subdivision, where battery casing materials containing lead (also known as chips) were used to fill low lying areas. The remote fill areas include most of the alleys in Venice Township (south and southeast of Madison), Slough Road, several locations in Granite City, and one area in Glen Carbon.

The IC table below summarizes the required ICs:

Restricted Area - Area that does not allow unlimited use and unrestricted exposure	**Performance Standard and Institutional Control Objective**	**Institutional Control Instruments**
Taracorp pile cap	Performance Standard: Containment -prohibit interference with the cap and required proper maintenance;	Restrictive Covenant/Easement (or explore UECA covenant)

	restrict land use along with prohibition on use of groundwater.	
Groundwater (site-related contamination confined to industrial portion of the Site)	Performance Standard: Containment until the groundwater reaches cleanup standards (MCLs) -Restrict groundwater use or additional wells.	Restrictive Covenant/Easement (or explore UECA covenant)
Trust 454/BV& G Transport/Rich Oil Properties	Performance Standard: Industrial standard (1000 ppm lead) -limit use of property to commercial/industrial and proper management of any disturbed material, along with prohibition on use of groundwater.	Restrictive Covenant/Easement (or explore UECA covenant)
Alleys in Venice and Eagle Park Acres, Illinois where crushed hard rubber battery case material was paved over	Performance Standard: Containment -prohibit interference with the pavement, and limit land use -require proper handling during maintenance/handling of any disturbed material.	Institutional Controls such as proprietary controls and governmental controls. Additionally, explore use of informational controls such as one-call system for excavators
Slough Road area where crushed hard rubber battery case material was left in place	Performance Standard: Containment -prohibit residential use of property and assure proper management of any disturbed material	Institutional Controls such as proprietary controls and governmental controls (or explore UECA covenant).
Residential properties where access for sampling/cleanup was denied	U.S. EPA recommends cleanup to UU/UE (500 ppm lead) however some property was not cleaned up because property owners refused access. - to notify future property owners and ensure proper management of any disturbed material.	Institutional Controls such as proprietary controls and governmental. Additionally, explore use of one-call system to facilitate the transfer of information.

Maps which represent the restricted areas are under development.

Required ICs are not yet in place. Long-term protectiveness of the remedy requires implementation of effective ICs and monitoring, maintenance and compliance with effective ICs along with remedy components. Various discussions have been on-going between U.S. EPA and Group about the types of ICs that should be implemented. On May 15, 2006, U.S. EPA sent a

letter requesting that Group's assistance in implementing ICs at the Site. The letter requested that the Group notify U.S. EPA within 10 days of its intent to comply and submit to U.S. EPA a work plan within 45 days.

That letter also required implementation of ICs and the legal descriptions, maps, and title work to demonstrate ownership and that was property free and clear of all prior liens and encumbrances (except those liens or encumbrances approved by U.S. EPA); and an amendment to the IC monitoring plan. U.S. EPA also provided model language for the required deed restrictions. Recently, since the State of Illinois passed the Uniform Environmental Covenants Act (UECA), at 165 ILCS Ch. 122, the parties should explore whether the Site would benefit from the use of the UECA covenants.

On May 26, 2006, the Group notified U.S. EPA of their intent to comply with the request in the letter and requested further guidance from U.S. EPA. On July 11, 2006, the Group issued copies of its IC Work Plan to U.S EPA for review and approval. Monthly meetings were held to discuss the scope of the ICs required for the Site. U.S. EPA issued preliminary comments. Efforts were made to identify the areas where residual contamination remains above the UU/UE standard and where ICs would be required. The Group identified 84 residential properties where the owner either denied access for sampling or cleanup. Additionally, the Group worked to identify property owners and maps depicting the physical locations of all areas that were cleaned up to a commercial/industrial standard which would not allow UU/UE. U.S. EPA provided examples of communication plans and maps to the Group. In conjunction with the IC activities, the Group also updated their previous maps and conducted property surveys for the areas that would be subject to the ICs. In December 2006, the Group's representatives along with U.S. EPA staff met with Granite City officials in regard to the ICs that would be required in the areas and the SEP project and discuss the possibility of an ordinance. Approximately 50 alleys containing residual battery chips in Venice were paved by the Group as part of the remedial activities. In June 2007, U.S. EPA prepared a letter to Mayor of Venice related to a potential ordinance to manage the paved alley under which the battery chips and prevent inappropriate disturbance of the alleys paved by the Group as part of the remedial activities at the Site. The Group drafted an Ordinance which is under review by U.S. EPA and IEPA. Communication was initiated with the property owner associated with the Slough Road areas to discuss implementation of a restrictive covenant for that property.

The Group has investigated the use of the Illinois one-call system, J.U.L.I.E., as an informational IC. To that end, the Group has had discussions with representatives of Consolidated Utilities Services, Inc and e-Locate Services, LLC related to the potential feasibility of including properties associated with the Site in the one-call program. In October 2007, the Group provided maps to U.S. EPA that had been prepared by J.U.L.I.E., the Illinois one-call center, to show the properties that will be part of the one call notification program for the Site. The maps were prepared using GPS coordinates. The Group prepared a draft excavation advisory to be used in conjunction with the one-call notification program. On October 5, 2006, U.S. EPA provided comments to the IC Work Plan. On February 28, 2008, the Group provided a revised IC Work

Plan to U.S. EPA. Based on on-going discussions, the Group submitted, on June 10, 2008, an edited version of the IC Work Plan.

Current Compliance with Intended Use Restrictions:

Current Compliance:

Industrial Site Area: According to inspections of the industrial portion of the Site, there is no current use of the landfill. Industrial uses on adjacent parcels are not anticipated to impact the landfill. The hazardous waste landfill cap must remain in place indefinitely to prevent exposure to underlying waste.

Groundwater: The property is currently zoned for industrial use and is being used for commercial/industrial purposes. Based on inspections and sampling activity, the groundwater contamination remains within the industrial area and access to that area is limited.

Residential yards: Approximately 1600 yards were remediated, however approximately 84 in the areas were not since the owners refused access for sampling and/or remediation. For this review, a subset of yards adjacent to the yards which refused access, were sampled. The only contamination found above the cleanup standards was found in the paint "drip zone" for two properties. That contamination is not related to the Site and will be referred for the SEP work. U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences with the highest lead concentrations that were not cleaned up due to access refusal (there are nine of them) to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate

Slough Road: This road is where crushed hard rubber battery case material and "battery chips" were used to fill low lying land. The battery chips are contaminated with lead. The main concern is direct contact and ingestion. In the past, Slough Road was an access point for a very small and isolated commercial/residential subdivision. A tavern remains at the entry point of Slough Road, but it appears to be infrequently open or patronized. All other building structures along Slough Road have been demolished.

Because the road was in a state of disrepair, the RA required that it be paved as a cap to prevent exposure to the battery chips. However, paving made it easier for open dumping to occur. To prevent the open dumping, access was further restricted by placement of large concrete pieces at the access point to prohibit access. Discussions have been on-going with the property owners to implement deed restrictions to limit the uses to commercial/industrial uses.

During the five-year review inspection, Slough Road was found to be inaccessible because of the concrete barriers. However battery chips were noted to be disbursed in the nearby parking area

leading to the road and tavern. There was no evidence of exposure to the chips and the likelihood is small since some of the chips were dispersed away from the capped area and there was no evidence that he road is frequented by visitors. However, to assure that no unanticipated exposures to the chips are occurring, following this review, consideration will be given by U.S. EPA and the Group to additional actions such as removal or capping and/or placing additional restrictions or placement of conspicuous notices.

Alleys:

The integrity of the covering/caps for the alleyways was good. There is no evidence of exposure from the battery chips from the alleys.

Long-Term Stewardship of Site ICs

Since compliance with ICs is necessary to assure the protectiveness of the remedy, planning for long-term stewardship is required. Long-term stewardship involves assuring effective procedures are in place to properly maintain and monitor the Site. Long-term stewardship will ensure that the Site remedy including effective ICs are maintained and monitored so that the remedy continues to function as intended. The O&M plan is in the process of being updated to include a requirement for an annual certification to U.S. EPA that ICs are in place and effective. Last, the development of a communications plan and the use of the State's one call system are being explored.

Financial Assurance

As required by the CD, the Group submits information to U.S. EPA annually to satisfy its financial assurance requirements.

SEP

The Group agreed to complete the SEP and it was embodied in the 2003 CD. The SEP was negotiated as part of the CD with the Group in lieu of penalties. U.S. EPA will provide oversight of the paint SEP and has already approved the SEP Work Plan. The general goals of the SEP undertaken were to assess and abate hazards from lead-based paint within the Site boundaries. The Group entered into an arrangement with the Madison County Community Development Agency (MCCDA) to conduct a lead based paint abatement program in Madison County. Under that provision, the Group would conduct a SEP to address lead-based paint for those homes within the Site area which were at risk. The paint SEP is part of the CD with the Group and provides $2,000,000 for paint assessment and abatement at residences within the Site area.

A SEP work plan was issued to U.S. EPA on March 22, 2004 by the MCCDA. U.S. EPA issued draft comments to the work plan in May 2004. In June 2004, U.S. EPA supplemented its comments by providing a map of the properties to be included. U.S. EPA's comments were the subject of subsequent discussions. The Group and the MCCDA addressed U.S. EPA's

comments and issued a revised work plan in June 2004. On August 16, 2004, U.S. EPA issued an approval with modifications for the revised SEP work plan. These modifications were addressed by the Group on August 31, 2004. In March 2007, U.S. EPA issued a clarification letter to the Group regarding soil sampling protocols, soil remediation procedures and the possibility of expanding the scope to increase participation in the program. The MCCDA continued to seek additional applicants for participation in the SEP and continued to perform the SEP for applicants who had been accepted into the program.

As part of the SEP work, the Group prepared a master list of properties. A public kick-off meeting was held in Granite City on April 13, 2005 to announce the SEP. The MCCDA has actively sought participants for the lead-abatement program. For example, on February 1, 2006, an article was placed in the Granite City Press record, explaining the program and requesting applicants. Also, one of the MCCDA lead program staff members helped at a school registration in the Madison School District and handed out promotional items, and the MCCDA developed door hangers to place on the doors of the homes in the Granite City, Madison and Venice. On January 29, 2008, the Group requested an extension of time to complete the SEP under March 20, 2003 CD. In February 2008, U.S. EPA extended the date by three years the period of time for completion of the SEP for the Site. The new completion date for the SEP is March 8, 2011.

The Group issues periodic progress reports to U.S. EPA documenting SEP efforts and expenditures.

V. PROGRESS SINCE LAST REVIEW

The first five-year review was conducted in 1999, when all aspects of the remedy were still underway. No issues were identified during this five-year review. The second five-year review was conducted in March 2004. During that review, the remedy was determined to be protective of human health and the environment and several minor issues were noted. This is the third post-construction five-year review for the Site. Monitoring has been conducted throughout the last five years.

Recommendations and Follow-up Actions

During the last five year review, several issues and recommendations were noted. Those are as follows: 1) need to implement ICs, 2) need to repair the minor ridges on the cap. Neither issue affected short term protectiveness. The other issue was completion of the SEP required under the CD. This requirement is an enhancement of the remedy required by the CD. Below is a status of the required follow-ups from the last five-year review.

1. Progress toward implementing the ICs.

It was noted that the ICs required by the ROD had not yet been put in place. Subsequent to the second five-year review, the Group submitted an IC work plan to U.S. EPA. U.S. EPA has provided comments and that has been the subject of much deliberation and planning. Monthly conference calls have been instituted to keep track of the progress. See section above regarding ICs. U.S. EPA will work with the Group to make sure that the required deed restrictions for the Site are put in place. The Group continues to address the ICs.

2. Progress toward repairing cap

The Group addressed the cap erosion identified during the second five-year review and continues to perform inspections at least twice per year. During an inspection on March 22, 2004, U.S. EPA observed erosion of the Taracorp pile cap in seven separate locations. The issue was resolved in the spring of 2005. Other inspections occurred in August 2004 (repairs made in September), November 2005, and continue to be conducted at least twice per year by the Group's O&M contractor. U.S. EPA will continue to provide oversight to ensure that cap is properly maintained.

3. Continued U.S. EPA Oversight Required of SEP implementation

The Group continues to implement the SEP. The last five-year review noted that the SEP was underway and required U.S. EPA to continue to monitor the SEP. Although not part of the ROD, the SEP is part of the CD and provides $2,000,000 for paint assessment and abatement at residences within the Site area. The SEP was negotiated as part of the CD with the generators in lieu of penalties. U.S. EPA has provided and will continue to provide oversight of the SEP and has already approved the SEP Work Plan. The SEP work began in 2004, and one of U.S. EPA's comments was to include the properties (identified by the sampling results in the Monitoring Report) that had lead recontamination in the drip zone in the list of properties to be addressed by the SEP. U.S. EPA will continue to monitor the SEP under the terms of the CD and attain a multi-media cleanup at the Site.

VI. FIVE YEAR REVIEW PROCESS

Administrative Components

IEPA was notified of this five-year review, participated in the inspection and conference calls to discuss work required by the five-year review and reviewed the Five-Year Review Report. The IEPA concurs with this Report's results. The periodic monitoring reports were reviewed which describe all the O&M work conducted. The sampling activities, which were required pursuant to this five-year review, were conducted pursuant to approved work plans and results are included in the Report.

The completed Five-Year Review Report will be placed in the Site information repository, and

notice of completion of the five-year review will be published in the local newspaper. Additionally, the completed five-year review will be available on U.S. EPA's website.

Community Involvement/Interviews

On October 29, 2008, U.S. EPA placed an ad in the paper to announce that the five-year review was underway and to solicit any comments *(see Appendix 1)*. No one raised any concerns that were specific to the five-year review or the protectiveness of the remedy. As part of the follow-up activities from the last five-year review, the Group did sample some residential yards to assess whether there were recontamination issues. This is discussed further below under Recent Soil Sampling conducted for the Five Year Review.

In the past, community involvement activities were performed throughout the duration of the Site investigation and cleanup activities. The most intense community relations activities were conducted from 1990 through 2000, when the Record of Decision was signed and the physical cleanup activities took place. Numerous public meetings and availability sessions were held during this period of time, as well as thousands of door-to-door visits to residents to obtain access for sampling and cleanup of the residential yards. Additionally, due to the large scope of the cleanup and the litigation activities with respect to the Site, numerous articles were written in the local newspapers, and National Public Radio aired a segment about the site cleanup shortly after it began in 1993. The public was generally supportive of the cleanup activities, and the cities of Venice and Madison, Illinois were as well.

Document Review

The list of documents and data reviewed in preparing for this Five-Year Review Report is listed in the attachment entitled "List of Documents Reviewed."

Data Review

Soil and groundwater sampling was conducted in conjunction with the five-year review. The data was reviewed and is included in this Report.

Site Inspections

The Site is physically inspected at least twice per year in accordance with the O&M Plan. Necessary O&M activities are conducted as soon as weather permits. The results of these inspections are communicated to U.S. EPA via the progress reports. Progress reports were submitted to U.S. EPA on a monthly basis to U.S. EPA until January 2006. Then, starting in 2006, the Group submitted the progress reports on a quarterly basis. In conjunction with this third five-year review, U.S. EPA inspected the Site on November 20, 2008. The inspection involved observations of the integrity of the cap on the pile, several of the residential yards, the capped alleys and the capped Slough Road area. The five-year review checklist is attached as

Appendix 6, and Site photographs from the inspection are found in Appendix 7. See summary of compliance under Institutional Controls above.

Sampling Conducted in Conjunction with the Five Year Review

Recent Soil Sampling Conducted for the Five-Year Review

Since some residences have refused access to U.S. EPA or the Group to sample or remediate their residential soil, there is a potential for recontamination to other properties on either side. As was indicated from the last five-year review, this sampling should continue. U.S. EPA required that the Group resample 11 residential yards as part of the five-year review monitoring to assess whether recontamination with lead from yards where residents refused access or other sources may be occurring.

In August 2008, U.S. EPA requested that the Group prepare a work plan for collection and analysis of soil samples of residential yards and groundwater samples near the pile. These requests were discussed during the September 25, 2008 monthly conference call with U.S. EPA and IEPA. Subsequently, on October 23, 2008, the Group submitted a Scope of Work (SOW) for conducting soil sampling and analysis. U.S. EPA reviewed and approved the SOW on November 28, 2008. After the Group secured access to the properties from the relevant property owners, the soil sampling and related activities were conducted.

The Group's consultant, Environmental Works, Inc. (EWI) personnel completed soil sampling as part of five-year review activities at the NL/Taracorp Site on January 21, 2009. Soil samples were collected at nine properties and were delivered to PDC Laboratories for analysis. The Group and EWI tried on several occasions but they were unable to contact the property owners at the other two properties by mail, telephone, or by knocking on doors. Once sampled, the lab analyses were requested on an expedited basis.

Attached are data tables prepared by EWI that summarize the results of soil sampling at nine properties as part of the five-year review at the NL/Taracorp Site. A copy of PDC Laboratories' data report is available in U.S. EPA's files.

As shown on EWI's data table, all of the lead concentrations in soil were below 500 mg/kg, except for the samples collected within the drip zones at 810 Iowa Street and 1622 Maple Street. The lead concentrations in the other soil samples collected at 810 Iowa Street and 1622 Maple Street (both of which were not remediated because previous sampling indicated lead concentrations below 500 mg/kg) seem consistent with data previously collected by the Group. Because the contamination was found in the drip zone, it is determined that the higher levels are associated with the exterior lead paint and not recontamination from the adjacent unremediated yards. These properties will be referred to the SEP program. U.S. EPA will also continue to require sampling for lead in soil in a representative number of residential yards that were cleaned

up to ensure that recontamination is identified and addressed, where appropriate. So far, the only recontamination identified was in the drip zone.

Recent groundwater sampling conducted for the Five Year Review

At the former smelting property, 17 wells currently exist in the monitoring network. These wells are not monitored except in conjunction with the five year review. More frequent monitoring is not required since the metals in the groundwater have been found not to be very mobile. The locations of the monitoring wells are shown on Figure 1, attached.

At the request of U.S. EPA, groundwater wells were sampled at the former smelter property in conjunction with the third five-year review to determine if the contamination in the groundwater was stable and contained under the former smelter property.

In August 2008, U.S. EPA requested that the Group prepare a work plan for conducting groundwater sampling and analysis for five-year review. This request was discussed during the September 25, 2008, monthly conference call with U.S. EPA and IEPA. Subsequently, on October 23, 2008, the Group submitted a SOW for groundwater sampling and analysis for the five-year review. U.S. EPA reviewed and approved the SOW, with modifications, on November 28, 2008.

After the Group secured access to the properties from the relevant property owners, the groundwater work was performed by ARCADIS. ARCADIS first conducted a monitoring well assessment at the former smelter property on December 18, 2008 on behalf of the Group. Based upon that assessment, it was determined that two monitoring wells were damaged. Also, it was determined that the wells needed to be redeveloped or overpumped to remove sediment that has accumulated in the bottom of the monitoring wells and to remove suspended solids that may have become lodged in the filter packs of the monitoring wells since the time they were last sampled about five years ago. This work was required to attempt to produce clear, low turbidity groundwater in the wells prior to sampling. The Group has requested from U.S. EPA and IEPA permission to abandon the damaged monitoring well MW-103R. This request is under review.

ARCADIS then remobilized to the Site on January 5, 2009 to perform the well repairs, the overpumping/redevelopment activities of the wells to remove accumulated sediment and suspended solids and related activities. At that time, ARCADIS determined that one of the two damaged wells could not be repaired. Groundwater sampling occurred between January 9 and January 13, 2009.

Attached is a data table, prepared by ARCADIS, which summarizes the groundwater data from the five-year review groundwater monitoring event at the former smelter property. The data table also includes a historical summary of groundwater data for each monitoring well. A copy of the analytical report from the laboratory can be found in U.S. EPA's files.

Based upon the groundwater monitoring it has been determined that groundwater contamination continues to be confined to the former smelter property. U.S. EPA recommends that the ground water monitoring be conducted again during the next five-year review.

Recent Leachate Monitoring Associated with the Five-Year Review

The wastes in the Taracorp pile are not conducive to leachate production. Part of the five-year review monitoring requires that the leachate collection system be monitored to determine if any leachate is present. This usually occurs in conjunction with the groundwater monitoring work. During that work, approximately 50 gallons of leachate were pumped.

On January 29, 2009, ARCADIS sent a letter to the Granite City Wastewater Treatment Plant seeking authorization to discharge about 50 gallons of leachate from the collection system within the Taracorp pile at the former smelter property into the sanitary sewer. Copies of ARCADIS' January 29, 2009 letter to the City, the Self-Monitoring Report (which shows that the constituent concentrations in the leachate are acceptable for discharge into the sanitary sewer), and the laboratory data are attached. The leachate was discharged into the sanitary sewer in February 2009 following receipt of the City's authorization.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents? Yes.

Remedial Action Performance

The remedial actions described in the decision documents have been implemented and the clean-up objectives have been met. During the remedy selection process, the primary exposure pathway identified at the Site was direct contact and ingestion of lead-contaminated soil and dust, and the secondary pathway was inhalation of fugitive dust from the Taracorp pile. Based on the visual observations and the monitoring, the remedy has been effective in addressing the primary exposure pathway. There were several yards that were sampled that had recontamination with lead in the drip zone of the house, a pathway that would likely be associated with lead-based exterior paint. Although not required by the ROD, the SEP to address paint issues in the Site area will be monitored by U.S. EPA to ensure that these homes with high lead concentrations in the drip zone are assessed and addressed, as necessary. The inspections of the cap on the Taracorp pile by U.S. EPA and IEPA indicate that the cap is in good condition (with minor ridges noted in one area), thus preventing the generation of fugitive dust lead. The inspection conducted on November 2008 identified one small area where ridges of the cap had occurred.

These inspections indicated that the remedy was effective in addressing the secondary exposure pathway.

Last, the ground water monitoring performed by the Group indicated that the lead, cadmium, and

zinc in the ground water in the vicinity of the Taracorp pile did not migrate further. The levels of these constituents generally decreased in the wells adjacent to the Taracorp pile, which was expected since the cap diverts most of the runoff away from the pile.

In summary, the data gathered during the third five-year review indicate that the remedy continues to function as designed, is performing as expected, and that the containment of contaminants is effective. The remedy is protective of human health and the environment in the short term. In order to be protective in the long-term, ICs need to be implemented, monitored, maintained, and enforced.

System Operation and Maintenance

The remedy for the Site does not include any operating systems. The Site is inspected at least twice per year. Maintenance and repairs are taken care of as needed. For example, site inspections to assess the integrity of the cap are conducted and repairs made, as needed. These inspections have been and will continue to be an effective means to ensure the cap integrity and other site areas.

O&M Costs

It was reported that the annual O&M costs for the Site for the years 2005 - 2008 were approximately $10,000 - $12,000 per year. The O&M costs for those years include semi-annual O&M inspections and reporting; mowing vegetation at the main industrial portion of the Site; removing vegetation (trees, bushes, etc.) from the fence at the main industrial portion of the Site; fence repairs at the main industrial portion of the Site; occasional removal of trash, debris, etc. from the main industrial portion of the Site; project coordination work related to O&M activities; and other minor tasks (sidewalk repairs, etc.).

Comparing those costs to the previous reporting period, the annual O&M costs in 2004 were approximately $21,000 because the Group incurred additional costs (approximately $9,000) to repair several eroded areas on the Taracorp pile cap and to remove eroded soil that had accumulated in the concrete storm water drainage channel around the Taracorp pile. The O&M costs noted above do not include legal costs, groundwater or soil sampling costs, SEP expenses, institutional controls costs, or project coordinator costs (except those related to O&M). Not included in the costs are the costs that the Group incurred in 2004 for demolition of the former BV&G Transport building and off-site transportation and disposal of demolition debris.

Opportunities for Optimization

Since there are no operating systems at the Site, there are limited opportunities for optimization of O&M. Prior to each five-year review, U.S. EPA and the Group may identify any sampling constituents that may be eliminated from the list of analytes. This will be discussed prior to the fourth five-year review for the Site.

Early Indicators of Potential Issues

Since there are no operating systems at the Site, the only early indicators of potential issues would be increasing lead concentrations in the residential yards that were cleaned up, physical observations of breeches in the cap, changes in the quantity and/or chemical composition of the leachate from the pile, or increases in the area and/or contaminant concentrations in the ground water plume. The data collected for the five-year review indicate that none of these issues are currently present. There was recontamination of the drip zones of several of the homes, and although not required by the ROD, U.S. EPA will refer homes for the SEP work.

Implementation of Institutional Controls and Other Measures

Access controls, in the form of fencing and warning signs, are in place at the Taracorp pile. These controls, along with the continued presence of Metalico (current owner of the former smelter property) employees at the site, are effective measures to limit access to the Taracorp pile. The ROD requirement for deed restrictions on the Taracorp pile has not yet been implemented, so U.S. EPA needs to work with the Group to ensure that these restrictions are put into place. U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences with the highest lead concentrations that were not cleaned up due to access refusal (there are nine of them) to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid? Yes.

Changes in Standards and To Be Considered Criteria

There have been no changes in standards or To Be Considered criteria since the second five-year review.

Changes in Exposure Pathways

Evidence of dispersed battery chips have found beyond the capped area at Slough Road. Although U.S. EPA does not believe that it affects the protectiveness of the remedy since there is no evidence that exposures are occurring, actions will be considered to address it under the IC Workplan. There have been no other changes in the potential exposure pathways at the Site since the implementation of the remedy for the Site. There have been no land use changes at the Site nor are any expected in the near future. There is currently no redevelopment or reuse proposed for the Taracorp pile.

Changes in Toxicity and Other Contaminant Characteristics

Neither the toxicity factors for the contaminants of concern nor other contaminant characteristics have changed in a way that could affect the protectiveness of the remedy. The primary contaminants of concern for the Site (lead and other metals) are basically inert.

Changes in Risk Assessment Methods

Standardized risk assessment methods have not changed in a way that could affect the protectiveness of the remedy.

Expected Progress Toward Meeting Remedial Action Objectives

The remedy for the Site is progressing as expected. Remedial Action Objectives have been met at the Site, and the monitoring programs will continue to ensure that any changes in contaminant levels will be detected and addressed, if necessary.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy? No.

Evidence of dispersed battery chips have found beyond the capped area at Slough Road. Although U.S. EPA does not believe that it affects the protectiveness of the remedy since there is no evidence that exposures are occurring, actions will be considered to address it under the IC Workplan. There are no other newly identified ecological risks, impacts from natural disasters, or any other information that has been identified that could affect the protectiveness of the remedy for the Site.

VIII. ISSUES

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Institutional Controls-Not implemented	N	Y
Minor ridges have developed on the cap in one area	N	Y
Spread of battery chips beyond paved area in Slough Road Area	N	Y

84 Residential yards have not been sampled and/or remediated due to access refusal	N	Y
Implementation of SEP	N	N

Based on the Monitoring Reports and physical observations made during the inspections of the Site, the above-mentioned issues were noted. First, the ICs required to ensure long-term protectiveness have not yet been put in place. Second, during an inspection, U.S. EPA observed minor ridges of the Taracorp pile cap in one location. Third, U.S. EPA noticed that some of the battery chips have been dispersed beyond the capped area in the Slough Road area. During sampling for recontamination, several properties were identified as having lead contamination above the cleanup level in the drip zone in the list of properties to be addressed by the SEP. U.S. EPA will continue to monitor the SEP under the terms of the CD and attain a multi-media cleanup at the Site. Also, the SEP work is still underway and U.S. EPA will continue to monitor the paint SEP. Last, U.S. EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA will also periodically check the residences which refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.

IX. RECOMENDATIONS AND FOLLOW-UP ACTIONS

Issue	**Recommendations /Follow-up actions**	**Party Responsible**	**Oversight Agency**	**Milestone Date**	**Affects Protectiveness (Y/N)**
Institutional Controls need to be implemented, monitored and maintained.	To assure that the ICs will be implemented monitored and maintained, U.S. EPA will continue to work with the Group to get an approvable IC Work Plan and oversee implementation.	PRP Group and U.S. EPA	U.S.EPA and IEPA	**March 2011**	N-current Y-future
Minor ridges on cap are	Fill/reseed cap	PRP Group	U.S.EPA And IEPA	**June 2009**	N-current Y-future

evident in one area.					
Spread of battery chips is evident beyond paved area in Slough Road Area	Explore removal/ capping and/or additional restrictions to assure no exposure is occurring	PRP Group	U.S.EPA And IEPA	**June 2010**	N-current Y-future
84 Residential yards have not been sampled and/or remediated due to access refusal	Monitoring *of residential yards that are adjacent to yards should continue where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S. EPA and the Group will make another concerted effort, as outlined in the IC Workplan, to check the residences who refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.	PRP Group	U.S.EPA And IEPA	**March 2014**	N-current Y-future

SEP implementation needs to continue	U.S. EPA Oversight	Madison County Community Development	U.S. EPA	**March 2011**	N-current N-future

*** Consideration to monitoring will occur at least every five years during the Five Year Review.**

U.S. EPA will work with the Group to make sure that the required deed restrictions for the Taracorp pile and the institutional controls for the Site are implemented. U.S. EPA will make sure that the routine repair of minor ridges on the Taracorp pile cap are undertaken as soon as weather permits. U.S. EPA will continue to provide oversight of the SEP and the twice-annual inspections of the Taracorp pile to ensure that the multi-media cleanup envisioned in the CD is properly implemented and that the cap over the Taracorp pile continues to provide a protective barrier over the wastes that were left in place at the Site. U.S. EPA will also continue to require sampling for lead in soil at a representative number of the residential yards that were cleaned up to ensure that recontamination is identified and addressed, where appropriate. So far, the only recontamination identified was in the drip zone of the homes, which is something that can and will be addressed by the paint SEP.

X. PROTECTIVENESS STATEMENT

The remedy at the Site is protective of human health and the environment in the short term because: the final remedy has been fully implemented (except at the residences that have refused access); the sampling data indicate that the remedy continues to be effective in addressing the exposure pathways that were identified at the Site; there is no evidence of current exposure (even for the concern noted in the Slough Road area where the battery chips have been spread beyond the capped area); and the groundwater contamination is confined to the former lead smelter property. Further, the CD provides an extra measure of protection by requiring the implementation of a SEP to address lead-based paint issues in the Site area. This SEP helps to provide a multi-media cleanup that goes beyond the requirements in the ROD for the Site. U.S. EPA will need to continue to monitor the progress of the SEP. However, required ICs are not yet in place. Long-term protectiveness of the remedy requires implementation of effective ICs and monitoring, maintenance and compliance with effective ICs along with remedy components. Compliance with effective ICs will be ensured through long term stewardship by implementing, maintaining, monitoring and enforcing effective ICs as well as maintaining the Site remedy components. Last, U.S EPA will continue to require monitoring of residential yards that are adjacent to yards where the residents refused access for the cleanup so that recontamination, if it occurs, can be addressed before it becomes a potential health issue. U.S EPA will also periodically check the residences which refused access for sampling or remediation to see if the owners have reconsidered their access refusal or if new owners would like to have the properties cleaned up, and take action as appropriate.

XI. NEXT REVIEW

The fourth five-year review for the Site will be performed within five years from the date of signature of this Third Five-Year Review Report (i.e. March 2014).